SEQUENCE LISTING

<110> Hughes, Martin J G
Santangelo, Joseph D
Lane, Jonathan D
Feldman, Robert
Moore, Joanne C
Dobson, Richard J
Everest, Paul
Dougan, Gordon
Wilson, Rebecca K

<120> Genes and Proteins, and Their Use

<130> GJE-70

<140> US 09/868,352
<141> 2001-06-15

<160> 35

<170> PatentIn version 3.1

<210> 1
<211> 587
<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(582)

<223>

<400> 1

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atg atc cca gta gta atc gaa caa aca agt cgt ggt gaa cgt tct tat       48
Met Ile Pro Val Val Ile Glu Gln Thr Ser Arg Gly Glu Arg Ser Tyr
1               5                  10                  15

gat att tac tca cgt ctt tta aaa gat cgt att att atg ttg aca ggc       96
Asp Ile Tyr Ser Arg Leu Leu Lys Asp Arg Ile Ile Met Leu Thr Gly
            20                  25                  30

caa gtt gag gat aat atg gcc aat agt atc att gca cag tta ttg ttt      144
Gln Val Glu Asp Asn Met Ala Asn Ser Ile Ile Ala Gln Leu Leu Phe
        35                  40                  45

ctc gat gca caa gat aat aca aag gat att tac ctt tat gtc aat aca      192
Leu Asp Ala Gln Asp Asn Thr Lys Asp Ile Tyr Leu Tyr Val Asn Thr
    50                  55                  60

cca ggt ggt tca gta tcg gct gga ctt gct att gtg gac acc atg aac      240
Pro Gly Gly Ser Val Ser Ala Gly Leu Ala Ile Val Asp Thr Met Asn
65                  70                  75                  80

ttc att aaa tcg gac gta cag acg att gtt atg ggg atg gct gct tcg      288
Phe Ile Lys Ser Asp Val Gln Thr Ile Val Met Gly Met Ala Ala Ser
                85                  90                  95

atg gga acc att att gct tca agt ggt gct aaa gga aaa cgt ttt atg      336
Met Gly Thr Ile Ile Ala Ser Ser Gly Ala Lys Gly Lys Arg Phe Met
            100                 105                 110

tta ccg aat gca gaa tat atg atc cac caa cca atg ggc gga aca ggc      384
Leu Pro Asn Ala Glu Tyr Met Ile His Gln Pro Met Gly Gly Thr Gly
        115                 120                 125

gga ggt aca cag caa tct gat atg gct atc gct gct gag cat ctt tta      432
Gly Gly Thr Gln Gln Ser Asp Met Ala Ile Ala Ala Glu His Leu Leu
    130                 135                 140
```

```
aaa acg cgt cat act tta gaa aaa atc tta gct gat aat tct ggt caa      480
Lys Thr Arg His Thr Leu Glu Lys Ile Leu Ala Asp Asn Ser Gly Gln
145                 150                 155                 160

tct att gaa aaa gtc cat gat gat gca gag cgt gat cgt tgg atg agt      528
Ser Ile Glu Lys Val His Asp Asp Ala Glu Arg Asp Arg Trp Met Ser
                165                 170                 175

gct caa gaa aca ctt gat tat ggc ttt att gat gaa atc atg gct aat      576
Ala Gln Glu Thr Leu Asp Tyr Gly Phe Ile Asp Glu Ile Met Ala Asn
            180                 185                 190

aat gaa taagg                                                       587
Asn Glu
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<210> 2

<211> 194

<212> PRT

<213> Streptococcus agalactiae

<400> 2

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Met Ile Pro Val Val Ile Glu Gln Thr Ser Arg Gly Glu Arg Ser Tyr
1               5                   10                  15

Asp Ile Tyr Ser Arg Leu Leu Lys Asp Arg Ile Ile Met Leu Thr Gly
            20                  25                  30

Gln Val Glu Asp Asn Met Ala Asn Ser Ile Ile Ala Gln Leu Leu Phe
        35                  40                  45

Leu Asp Ala Gln Asp Asn Thr Lys Asp Ile Tyr Leu Tyr Val Asn Thr
    50                  55                  60

Pro Gly Gly Ser Val Ser Ala Gly Leu Ala Ile Val Asp Thr Met Asn
65                  70                  75                  80

Phe Ile Lys Ser Asp Val Gln Thr Ile Val Met Gly Met Ala Ala Ser
                85                  90                  95
```

Met Gly Thr Ile Ile Ala Ser Ser Gly Ala Lys Gly Lys Arg Phe Met
100 105 110

Leu Pro Asn Ala Glu Tyr Met Ile His Gln Pro Met Gly Gly Thr Gly
115 120 125

Gly Gly Thr Gln Gln Ser Asp Met Ala Ile Ala Ala Glu His Leu Leu
130 135 140

Lys Thr Arg His Thr Leu Glu Lys Ile Leu Ala Asp Asn Ser Gly Gln
145 150 155 160

Ser Ile Glu Lys Val His Asp Asp Ala Glu Arg Asp Arg Trp Met Ser
165 170 175

Ala Gln Glu Thr Leu Asp Tyr Gly Phe Ile Asp Glu Ile Met Ala Asn
180 185 190

Asn Glu

<210> 3

<211> 218

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(216)

<223>

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Ile Arg Ala Tyr Ser Gly Pro Leu Ser Val Phe Leu Pro Arg Phe Lys
1               5                  10                  15

gct tgt gat ata ata gtc aat gtg agg agg act atc atg tta ttt aag      96
Ala Cys Asp Ile Ile Val Asn Val Arg Arg Thr Ile Met Leu Phe Lys
            20                  25                  30

gaa aaa att cct gga cta ata tta tgc ttt att att gct ata cca tct     144
Glu Lys Ile Pro Gly Leu Ile Leu Cys Phe Ile Ile Ala Ile Pro Ser
        35                  40                  45

tgg ttg ctt ggg ctt tat ctc cct tta ata gga gca cca gtc ttt gct     192
Trp Leu Leu Gly Leu Tyr Leu Pro Leu Ile Gly Ala Pro Val Phe Ala
    50                  55                  60

atc ttg att gga ata att gtt gga tc                                  218
Ile Leu Ile Gly Ile Ile Val Gly
65                  70
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<210> 4

<211> 72

<212> PRT

<213> Streptococcus agalactiae

<400> 4

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Ile Arg Ala Tyr Ser Gly Pro Leu Ser Val Phe Leu Pro Arg Phe Lys
1               5                  10                  15

Ala Cys Asp Ile Ile Val Asn Val Arg Arg Thr Ile Met Leu Phe Lys
            20                  25                  30

Glu Lys Ile Pro Gly Leu Ile Leu Cys Phe Ile Ile Ala Ile Pro Ser
        35                  40                  45

Trp Leu Leu Gly Leu Tyr Leu Pro Leu Ile Gly Ala Pro Val Phe Ala
    50                  55                  60

Ile Leu Ile Gly Ile Ile Val Gly
65                  70
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<210> 5

<211> 705

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(705)

<223>

<400> 5

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atg aat aaa aga aga aaa tta tca aaa ttg aat gta aaa aar caa cat      48
Met Asn Lys Arg Arg Lys Leu Ser Lys Leu Asn Val Lys Lys Gln His
1               5                   10                  15

tta gct tat gga gct atc act tta gta gcc ctt ttt tca tgt att ttg      96
Leu Ala Tyr Gly Ala Ile Thr Leu Val Ala Leu Phe Ser Cys Ile Leu
            20                  25                  30

gct gta acg gtc atc ttt aaa agt tca caa gtt act act gaa tct ttg     144
Ala Val Thr Val Ile Phe Lys Ser Ser Gln Val Thr Thr Glu Ser Leu
        35                  40                  45

tca aaa gca gat aaa gtt cgc gta gcc aaa aaa tca aaa atg act aag     192
Ser Lys Ala Asp Lys Val Arg Val Ala Lys Lys Ser Lys Met Thr Lys
    50                  55                  60

gcg aca tct aaa tca aaa gta gaa gat gta aaa cag gct cca aaa cct     240
Ala Thr Ser Lys Ser Lys Val Glu Asp Val Lys Gln Ala Pro Lys Pro
65                  70                  75                  80

tct cag gca tct aat gaa gcc cca aaa tca agt tct caa tct aca gaa     288
Ser Gln Ala Ser Asn Glu Ala Pro Lys Ser Ser Ser Gln Ser Thr Glu
                85                  90                  95

gct aat tct cag caa caa gtt act gcg agt gaa gag acg gct gta gaa     336
Ala Asn Ser Gln Gln Gln Val Thr Ala Ser Glu Glu Thr Ala Val Glu
            100                 105                 110

caa gca gtt gta aca gaa ata ccc ctg cta cca gtc agg cac aac aac     384
```

```
Gln Ala Val Val Thr Glu Ile Pro Leu Leu Pro Val Arg His Asn Asn
        115                 120                 125

ctt tat gct gtt act gag aca cct tac aac cct gct caa cca cca gac      432
Leu Tyr Ala Val Thr Glu Thr Pro Tyr Asn Pro Ala Gln Pro Pro Asp
    130                 135                 140

caa gtg gcc agg tat gag caa tgg aaa tac tgc cag gcg gtc gga tct      480
Gln Val Ala Arg Tyr Glu Gln Trp Lys Tyr Cys Gln Ala Val Gly Ser
145                 150                 155                 160

gct gct gca gca caa atg gct gct gca aca gga gtc cct cag tct act      528
Ala Ala Ala Ala Gln Met Ala Ala Ala Thr Gly Val Pro Gln Ser Thr
                165                 170                 175

tgg gaa cat att att gcc cgt gaa tca aat ggt aat cct aat gtt gct      576
Trp Glu His Ile Ile Ala Arg Glu Ser Asn Gly Asn Pro Asn Val Ala
            180                 185                 190

aat gcc tca gga gct tca gga ctt ttc caa acg atg cca ggt tgg ggt      624
Asn Ala Ser Gly Ala Ser Gly Leu Phe Gln Thr Met Pro Gly Trp Gly
        195                 200                 205

tca aca gct aca gtt cag gat caa gta att cag cta tta aag ctt att      672
Ser Thr Ala Thr Val Gln Asp Gln Val Ile Gln Leu Leu Lys Leu Ile
    210                 215                 220

cgt gct caa ggg tta tca gct ggg tac cag tga                         705
Arg Ala Gln Gly Leu Ser Ala Gly Tyr Gln
225                 230
```

<210> 6

<211> 234

<212> PRT

<213> Streptococcus agalactiae

<400> 6

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Met Asn Lys Arg Arg Lys Leu Ser Lys Leu Asn Val Lys Lys Gln His
1               5                   10                  15

Leu Ala Tyr Gly Ala Ile Thr Leu Val Ala Leu Phe Ser Cys Ile Leu
            20                  25                  30
```

```
Ala Val Thr Val Ile Phe Lys Ser Ser Gln Val Thr Thr Glu Ser Leu
        35                  40                  45

Ser Lys Ala Asp Lys Val Arg Val Ala Lys Lys Ser Lys Met Thr Lys
    50                  55                  60

Ala Thr Ser Lys Ser Lys Val Glu Asp Val Lys Gln Ala Pro Lys Pro
65                  70                  75                  80

Ser Gln Ala Ser Asn Glu Ala Pro Lys Ser Ser Ser Gln Ser Thr Glu
                85                  90                  95

Ala Asn Ser Gln Gln Gln Val Thr Ala Ser Glu Glu Thr Ala Val Glu
            100                 105                 110

Gln Ala Val Val Thr Glu Ile Pro Leu Leu Pro Val Arg His Asn Asn
        115                 120                 125

Leu Tyr Ala Val Thr Glu Thr Pro Tyr Asn Pro Ala Gln Pro Pro Asp
    130                 135                 140

Gln Val Ala Arg Tyr Glu Gln Trp Lys Tyr Cys Gln Ala Val Gly Ser
145                 150                 155                 160

Ala Ala Ala Ala Gln Met Ala Ala Ala Thr Gly Val Pro Gln Ser Thr
                165                 170                 175

Trp Glu His Ile Ile Ala Arg Glu Ser Asn Gly Asn Pro Asn Val Ala
            180                 185                 190

Asn Ala Ser Gly Ala Ser Gly Leu Phe Gln Thr Met Pro Gly Trp Gly
        195                 200                 205

Ser Thr Ala Thr Val Gln Asp Gln Val Ile Gln Leu Leu Lys Leu Ile
    210                 215                 220

Arg Ala Gln Gly Leu Ser Ala Gly Tyr Gln
225                 230
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<210> 7

<211> 594

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(594)

<223>

<400> 7

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Met Thr Glu Pro Phe Phe Asp Lys Glu Leu Thr Cys Arg Pro Ile Glu
1               5                  10                  15

gcc att cct gaa ttg ttg gaa ttc gat att acc gtt cgt gga gac aac      96
Ala Ile Pro Glu Leu Leu Glu Phe Asp Ile Thr Val Arg Gly Asp Asn
            20                  25                  30

cgt gga tgg ttc aaa gag aac ttt caa aaa gaa aaa atg ata ccg ctt     144
Arg Gly Trp Phe Lys Glu Asn Phe Gln Lys Glu Lys Met Ile Pro Leu
        35                  40                  45

ggt ttc cca gaa agc ttc ttt gag gca gac aaa cta caa aat aat att     192
Gly Phe Pro Glu Ser Phe Phe Glu Ala Asp Lys Leu Gln Asn Asn Ile
    50                  55                  60

tcg ttt aca aaa aaa aat act ttg cga ggt ctc cat gca gag cct tgg     240
Ser Phe Thr Lys Lys Asn Thr Leu Arg Gly Leu His Ala Glu Pro Trp
65                  70                  75                  80

gat aaa tat gtt tcg atc gct gat gaa gga cgt gtg atc ggt act tgg     288
Asp Lys Tyr Val Ser Ile Ala Asp Glu Gly Arg Val Ile Gly Thr Trp
                85                  90                  95

gtt gac ctc cgt gaa ggt gac agt ttt ggt aac gtt tac caa acg att     336
Val Asp Leu Arg Glu Gly Asp Ser Phe Gly Asn Val Tyr Gln Thr Ile
            100                 105                 110

atc gat gcc tca aaa ggt att ttt gtt cca cgc ggc gtt gct aat ggt     384
```

```
Ile Asp Ala Ser Lys Gly Ile Phe Val Pro Arg Gly Val Ala Asn Gly
        115                 120                 125

ttc caa gtt ctt tca gat aaa gca gct tat act tat ctc gtt aac gat      432
Phe Gln Val Leu Ser Asp Lys Ala Ala Tyr Thr Tyr Leu Val Asn Asp
    130                 135                 140

tat tgg gca ctt gaa ctc aaa cca aaa tat gct ttc gtt aac tat gca      480
Tyr Trp Ala Leu Glu Leu Lys Pro Lys Tyr Ala Phe Val Asn Tyr Ala
145                 150                 155                 160

gat cca aat cta ggc att cag tgg gaa aat ctw gaa gaa gca gaa gtc      528
Asp Pro Asn Leu Gly Ile Gln Trp Glu Asn Leu Glu Glu Ala Glu Val
                165                 170                 175

tca gaa gca gat aag aat cac cca ctt ctc aaa gat gta aaa cct ttg      576
Ser Glu Ala Asp Lys Asn His Pro Leu Leu Lys Asp Val Lys Pro Leu
            180                 185                 190

aag aag gaa gat ttg taa                                            594
Lys Lys Glu Asp Leu
        195
```

<210> 8

<211> 197

<212> PRT

<213> Streptococcus agalactiae

<400> 8

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Met Thr Glu Pro Phe Phe Asp Lys Glu Leu Thr Cys Arg Pro Ile Glu
1               5                   10                  15

Ala Ile Pro Glu Leu Leu Glu Phe Asp Ile Thr Val Arg Gly Asp Asn
            20                  25                  30

Arg Gly Trp Phe Lys Glu Asn Phe Gln Lys Glu Lys Met Ile Pro Leu
        35                  40                  45

Gly Phe Pro Glu Ser Phe Phe Glu Ala Asp Lys Leu Gln Asn Asn Ile
    50                  55                  60
```

```
Ser Phe Thr Lys Lys Asn Thr Leu Arg Gly Leu His Ala Glu Pro Trp
65                  70                  75                  80

Asp Lys Tyr Val Ser Ile Ala Asp Glu Gly Arg Val Ile Gly Thr Trp
                85                  90                  95

Val Asp Leu Arg Glu Gly Asp Ser Phe Gly Asn Val Tyr Gln Thr Ile
            100                 105                 110

Ile Asp Ala Ser Lys Gly Ile Phe Val Pro Arg Gly Val Ala Asn Gly
        115                 120                 125

Phe Gln Val Leu Ser Asp Lys Ala Ala Tyr Thr Tyr Leu Val Asn Asp
    130                 135                 140

Tyr Trp Ala Leu Glu Leu Lys Pro Lys Tyr Ala Phe Val Asn Tyr Ala
145                 150                 155                 160

Asp Pro Asn Leu Gly Ile Gln Trp Glu Asn Leu Glu Glu Ala Glu Val
                165                 170                 175

Ser Glu Ala Asp Lys Asn His Pro Leu Leu Lys Asp Val Lys Pro Leu
            180                 185                 190

Lys Lys Glu Asp Leu
        195
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<210> 9

<211> 1217

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> misc_feature

<222> (571)..(571)

<223> N can be A, G, C, or T.

<220>

<221> CDS

<222> (1)..(570)

<223>

<220>

<221> CDS

<222> (679)..(945)

<223>

<400> 9

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tat tat tta atc gga ggg ttg gca gaa atg caa cat gtc aat cat tct       48
Tyr Tyr Leu Ile Gly Gly Leu Ala Glu Met Gln His Val Asn His Ser
1               5                   10                  15

tct ttt gat aaa gca tca aaa gca gga ttt att att gct tta ggc att       96
Ser Phe Asp Lys Ala Ser Lys Ala Gly Phe Ile Ile Ala Leu Gly Ile
            20                  25                  30

gtt tat gga gat att ggt aca agc cca ctc tat acg atg caa tca ttg      144
Val Tyr Gly Asp Ile Gly Thr Ser Pro Leu Tyr Thr Met Gln Ser Leu
        35                  40                  45

gtt gaa aac caa ggt ggt att tct agt gtc aca gaa tcg ttt atc tta      192
Val Glu Asn Gln Gly Gly Ile Ser Ser Val Thr Glu Ser Phe Ile Leu
    50                  55                  60

ggt tct ata tct tta atc ata tgg acc ttg aca ctt att aca act atc      240
Gly Ser Ile Ser Leu Ile Ile Trp Thr Leu Thr Leu Ile Thr Thr Ile
65                  70                  75                  80

aag tat gtg ctt gta gct tta aag gcg gat aat cac cac gaa ggt ggt      288
Lys Tyr Val Leu Val Ala Leu Lys Ala Asp Asn His His Glu Gly Gly
                85                  90                  95

att ttt tct tta tat acc ctt gtt aga aaa atg aca cct tgg tta att      336
```

```
Ile Phe Ser Leu Tyr Thr Leu Val Arg Lys Met Thr Pro Trp Leu Ile
            100                 105                 110

gtt ccg gct gtt att gga ggt gca acc ttg ttg tca gat gga gct ttg      384
Val Pro Ala Val Ile Gly Gly Ala Thr Leu Leu Ser Asp Gly Ala Leu
        115                 120                 125

acg cca gct gta acc gta ctt cag ccg tta agg att aaa gta gtt cct      432
Thr Pro Ala Val Thr Val Leu Gln Pro Leu Arg Ile Lys Val Val Pro
    130                 135                 140

agt ttg cag cat att tcc aga atc aga gta tgt tat ttt gcg acc ttg      480
Ser Leu Gln His Ile Ser Arg Ile Arg Val Cys Tyr Phe Ala Thr Leu
145                 150                 155                 160

tta ttt act gtt act ttt gcc atc caa ggt ttg gaa cgg gtg tta ttg      528
Leu Phe Thr Val Thr Phe Ala Ile Gln Gly Leu Glu Arg Val Leu Leu
                165                 170                 175

gaa tta ttg gcc att atg tta tat ggt ttg cct ttt ggt tta              570
Glu Leu Leu Ala Ile Met Leu Tyr Gly Leu Pro Phe Gly Leu
            180                 185                 190

ncggtctcct tatagttttg cccatccaga agttttcaag cattaatcca tactacggtt    630

tgaaattgtt atttagtcca gagaatcata aaggtatttt tattttag gat cta ttt     687
                                                Asp Leu Phe

tcc tgg cga caa acg gga gca gaa gca cta tac tct gac tta ggt cat      735
Ser Trp Arg Gln Thr Gly Ala Glu Ala Leu Tyr Ser Asp Leu Gly His
    195                 200                 205

gtt ggg cgt gga aat ata cat gtt tca tgg ccg ttc gtt aag gtt gcc      783
Val Gly Arg Gly Asn Ile His Val Ser Trp Pro Phe Val Lys Val Ala
210                 215                 220                 225

att ata ctt tct tat tgt ggg caa ggg gca tgg att tta gct aat aag      831
Ile Ile Leu Ser Tyr Cys Gly Gln Gly Ala Trp Ile Leu Ala Asn Lys
                230                 235                 240

aac gca gga aat gaa ttg aat ccc ttt ttt gct agt att cct tcg caa      879
Asn Ala Gly Asn Glu Leu Asn Pro Phe Phe Ala Ser Ile Pro Ser Gln
            245                 250                 255

ttt aca atg cat gtc gtt att tta gct act ttg gca gct atc atc gct      927
Phe Thr Met His Val Val Ile Leu Ala Thr Leu Ala Ala Ile Ile Ala
        260                 265                 270

tca cag gca ctg att tct ggatcaattt accttaagtt ctgagctatg             975
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Ser Gln Ala Leu Ile Ser
275

cgactaaaaa tattcccaca atttcgttca acttatcctg ttgacaatat tgggtcaaac 1035

ctacatacct ggtattaatt ggttcttatt tgccattaca acctctattg gtttgctttt 1095

taagacttca gcgcacatgg aagcagcata tggattagcg ataacaatta cgatgctaat 1155

gacaactatt ttactgtctt tctttttaat tcaaaaagga gtaaagagag gttttagcta 1215

tt 1217

<210> 10

<211> 190

<212> PRT

<213> Streptococcus agalactiae

<400> 10

Tyr Tyr Leu Ile Gly Gly Leu Ala Glu Met Gln His Val Asn His Ser
1 5 10 15

Ser Phe Asp Lys Ala Ser Lys Ala Gly Phe Ile Ile Ala Leu Gly Ile
20 25 30

Val Tyr Gly Asp Ile Gly Thr Ser Pro Leu Tyr Thr Met Gln Ser Leu
35 40 45

Val Glu Asn Gln Gly Gly Ile Ser Ser Val Thr Glu Ser Phe Ile Leu
50 55 60

Gly Ser Ile Ser Leu Ile Ile Trp Thr Leu Thr Leu Ile Thr Thr Ile
65 70 75 80

Lys Tyr Val Leu Val Ala Leu Lys Ala Asp Asn His His Glu Gly Gly
85 90 95

Ile Phe Ser Leu Tyr Thr Leu Val Arg Lys Met Thr Pro Trp Leu Ile
100 105 110

Val Pro Ala Val Ile Gly Gly Ala Thr Leu Leu Ser Asp Gly Ala Leu
115 120 125

Thr Pro Ala Val Thr Val Leu Gln Pro Leu Arg Ile Lys Val Val Pro
130 135 140

Ser Leu Gln His Ile Ser Arg Ile Arg Val Cys Tyr Phe Ala Thr Leu
145 150 155 160

Leu Phe Thr Val Thr Phe Ala Ile Gln Gly Leu Glu Arg Val Leu Leu
165 170 175

Glu Leu Leu Ala Ile Met Leu Tyr Gly Leu Pro Phe Gly Leu
180 185 190

<210> 11

<211> 89

<212> PRT

<213> Streptococcus agalactiae

<400> 11

Asp Leu Phe Ser Trp Arg Gln Thr Gly Ala Glu Ala Leu Tyr Ser Asp
1 5 10 15

Leu Gly His Val Gly Arg Gly Asn Ile His Val Ser Trp Pro Phe Val
20 25 30

Lys Val Ala Ile Ile Leu Ser Tyr Cys Gly Gln Gly Ala Trp Ile Leu
35 40 45

Ala Asn Lys Asn Ala Gly Asn Glu Leu Asn Pro Phe Phe Ala Ser Ile
50 55 60

```
Pro Ser Gln Phe Thr Met His Val Val Ile Leu Ala Thr Leu Ala Ala
65                  70                  75                  80

Ile Ile Ala Ser Gln Ala Leu Ile Ser
                85
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<210> 12

<211> 378

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(378)

<223>

<400> 12

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atg cag gta ttt tta aat att gtc aat aaa ttc ttt gat cca gtt att      48
Met Gln Val Phe Leu Asn Ile Val Asn Lys Phe Phe Asp Pro Val Ile
1               5                  10                  15

cat atg ggt tcg gga gtt gtg atg cta att gtc atg aca ggt tta gcc      96
His Met Gly Ser Gly Val Val Met Leu Ile Val Met Thr Gly Leu Ala
            20                  25                  30

atg ata ttt gga gtg aag ttt tct aaa gca ctt gaa ggt ggt att aag     144
Met Ile Phe Gly Val Lys Phe Ser Lys Ala Leu Glu Gly Gly Ile Lys
        35                  40                  45

tta gct att gct ctt acg ggt att ggt gct att att ggt att tta act     192
Leu Ala Ile Ala Leu Thr Gly Ile Gly Ala Ile Ile Gly Ile Leu Thr
    50                  55                  60

ggt gct ttt tcc gaa tca ctt caa gct ttt gtt aaa aat aca gga atc     240
Gly Ala Phe Ser Glu Ser Leu Gln Ala Phe Val Lys Asn Thr Gly Ile
65                  70                  75                  80

aat cta agc att att gac gtt ggt tgg gct cca tta gca act att aca     288
```

```
Asn Leu Ser Ile Ile Asp Val Gly Trp Ala Pro Leu Ala Thr Ile Thr
                85                  90                  95

tgg gga tca cca tat acg ctt tac ttc tta tta atc atg ctt att gtc      336
Trp Gly Ser Pro Tyr Thr Leu Tyr Phe Leu Leu Ile Met Leu Ile Val
            100                 105                 110

aat att gtt atg att gtt atg aaa aaa aaa cgg ata cct tag              378
Asn Ile Val Met Ile Val Met Lys Lys Lys Arg Ile Pro
        115                 120                 125
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<210> 13

<211> 125

<212> PRT

<213> Streptococcus agalactiae

<400> 13

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Met Gln Val Phe Leu Asn Ile Val Asn Lys Phe Phe Asp Pro Val Ile
1               5                   10                  15

His Met Gly Ser Gly Val Val Met Leu Ile Val Met Thr Gly Leu Ala
            20                  25                  30

Met Ile Phe Gly Val Lys Phe Ser Lys Ala Leu Glu Gly Gly Ile Lys
        35                  40                  45

Leu Ala Ile Ala Leu Thr Gly Ile Gly Ala Ile Ile Gly Ile Leu Thr
    50                  55                  60

Gly Ala Phe Ser Glu Ser Leu Gln Ala Phe Val Lys Asn Thr Gly Ile
65                  70                  75                  80

Asn Leu Ser Ile Ile Asp Val Gly Trp Ala Pro Leu Ala Thr Ile Thr
                85                  90                  95

Trp Gly Ser Pro Tyr Thr Leu Tyr Phe Leu Leu Ile Met Leu Ile Val
            100                 105                 110
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Asn Ile Val Met Ile Val Met Lys Lys Lys Arg Ile Pro
        115                 120                 125
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<210> 14

<211> 705

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (118)..(705)

<223>

<400> 14

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ggatcgggcg caagcttaac gattcttttt aaaatcatta aattttaaaa caaatttcag     60

acatattgcc aaagttttga tattattact ataatatagt ttgtagagga gaataat       117

atg ggc caa gaa cct atc atc gaa tat caa aat atc aat aaa gtg tat      165
Met Gly Gln Glu Pro Ile Ile Glu Tyr Gln Asn Ile Asn Lys Val Tyr
1               5                   10                  15

ggg gaa aat gtt gcg gtt gaa gat att aac ctt aaa att tac cct ggt      213
Gly Glu Asn Val Ala Val Glu Asp Ile Asn Leu Lys Ile Tyr Pro Gly
            20                  25                  30

gat ttc gtt tgt ttc atc ggt acg agt gga tca ggt aaa aca aca tta      261
Asp Phe Val Cys Phe Ile Gly Thr Ser Gly Ser Gly Lys Thr Thr Leu
        35                  40                  45

atg cgt atg gtt aac cat atg tta aaa cca aca aat ggt act cta tta      309
Met Arg Met Val Asn His Met Leu Lys Pro Thr Asn Gly Thr Leu Leu
    50                  55                  60

ttt aag gga aaa gat atc tct act att aac ccc att gaa tta aga cgc      357
Phe Lys Gly Lys Asp Ile Ser Thr Ile Asn Pro Ile Glu Leu Arg Arg
65                  70                  75                  80

aga att gga tat gtt atc caa aac att ggt tta atg cct cat atg acc      405
```

```
Arg Ile Gly Tyr Val Ile Gln Asn Ile Gly Leu Met Pro His Met Thr
                85                  90                  95

att tac gaa aat ata gtt ctt gta cca aaa tta ttg aaa tgg tca gaa      453
Ile Tyr Glu Asn Ile Val Leu Val Pro Lys Leu Leu Lys Trp Ser Glu
            100                 105                 110

gaa gct aaa aga gct aaa gca agg gaa ctt att aaa tta gtt gaa tta      501
Glu Ala Lys Arg Ala Lys Ala Arg Glu Leu Ile Lys Leu Val Glu Leu
        115                 120                 125

ccc gaa gaa tat ttg gat cgc tac cct agt gag ttg tct ggc ggt cag      549
Pro Glu Glu Tyr Leu Asp Arg Tyr Pro Ser Glu Leu Ser Gly Gly Gln
    130                 135                 140

caa caa cgt atc ggt gtc att cgc gct ctt gca gca gac caa gat att      597
Gln Gln Arg Ile Gly Val Ile Arg Ala Leu Ala Ala Asp Gln Asp Ile
145                 150                 155                 160

att tta atg gat gag cct ttt gga gct ctg gat cct att act aga gaa      645
Ile Leu Met Asp Glu Pro Phe Gly Ala Leu Asp Pro Ile Thr Arg Glu
                165                 170                 175

ggt att caa gac ttt agt caa gtc tct tca gga aga aat ggg gga aaa      693
Gly Ile Gln Asp Phe Ser Gln Val Ser Ser Gly Arg Asn Gly Gly Lys
            180                 185                 190

cta tca tct tag                                                     705
Leu Ser Ser
        195
```

<210> 15

<211> 195

<212> PRT

<213> Streptococcus agalactiae

<400> 15

```
Met Gly Gln Glu Pro Ile Ile Glu Tyr Gln Asn Ile Asn Lys Val Tyr
1               5                   10                  15

Gly Glu Asn Val Ala Val Glu Asp Ile Asn Leu Lys Ile Tyr Pro Gly
            20                  25                  30
```

```
Asp Phe Val Cys Phe Ile Gly Thr Ser Gly Ser Gly Lys Thr Thr Leu
        35                  40                  45

Met Arg Met Val Asn His Met Leu Lys Pro Thr Asn Gly Thr Leu Leu
    50                  55                  60

Phe Lys Gly Lys Asp Ile Ser Thr Ile Asn Pro Ile Glu Leu Arg Arg
65                  70                  75                  80

Arg Ile Gly Tyr Val Ile Gln Asn Ile Gly Leu Met Pro His Met Thr
                85                  90                  95

Ile Tyr Glu Asn Ile Val Leu Val Pro Lys Leu Leu Lys Trp Ser Glu
            100                 105                 110

Glu Ala Lys Arg Ala Lys Ala Arg Glu Leu Ile Lys Leu Val Glu Leu
        115                 120                 125

Pro Glu Glu Tyr Leu Asp Arg Tyr Pro Ser Glu Leu Ser Gly Gly Gln
    130                 135                 140

Gln Gln Arg Ile Gly Val Ile Arg Ala Leu Ala Ala Asp Gln Asp Ile
145                 150                 155                 160

Ile Leu Met Asp Glu Pro Phe Gly Ala Leu Asp Pro Ile Thr Arg Glu
                165                 170                 175

Gly Ile Gln Asp Phe Ser Gln Val Ser Ser Gly Arg Asn Gly Gly Lys
            180                 185                 190

Leu Ser Ser
        195
```

<210> 16

<211> 367

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(366)

<223>

<400> 16

```
atc cct tat agt gat gtt ttt gct aca gga gga ttt tta tac tat gta       48
Ile Pro Tyr Ser Asp Val Phe Ala Thr Gly Gly Phe Leu Tyr Tyr Val
1               5                  10                  15

acg att gct cta agt tac ctt tta ggg tct agt atc tgg tta ttt att       96
Thr Ile Ala Leu Ser Tyr Leu Leu Gly Ser Ser Ile Trp Leu Phe Ile
            20                  25                  30

gta cag ttt att gct tac tat gta tct gga att tat ttt tat aaa tta      144
Val Gln Phe Ile Ala Tyr Tyr Val Ser Gly Ile Tyr Phe Tyr Lys Leu
        35                  40                  45

gtt tat tat gtg gca caa agt gaa att gtc tcg ata ggc atg acg ttg      192
Val Tyr Tyr Val Ala Gln Ser Glu Ile Val Ser Ile Gly Met Thr Leu
    50                  55                  60

att ttc tat ata atg aat att gtc tta gga ttc ggt ggt atg tac cca      240
Ile Phe Tyr Ile Met Asn Ile Val Leu Gly Phe Gly Gly Met Tyr Pro
65                  70                  75                  80

ata cag tgg gca tta cct ttt atg ctc att tcg cta tgg ttt tta att      288
Ile Gln Trp Ala Leu Pro Phe Met Leu Ile Ser Leu Trp Phe Leu Ile
                85                  90                  95

aaa ttt tgt gtc gat aat atc gtt gat gaa gca ttt ata ttt tat ggt      336
Lys Phe Cys Val Asp Asn Ile Val Asp Glu Ala Phe Ile Phe Tyr Gly
            100                 105                 110

att tta gca gca ttc tca cta ttt ata gat c                           367
Ile Leu Ala Ala Phe Ser Leu Phe Ile Asp
        115                 120
```

<210> 17

<211> 122

<212> PRT

<213> Streptococcus agalactiae

<400> 17

```
Ile Pro Tyr Ser Asp Val Phe Ala Thr Gly Gly Phe Leu Tyr Tyr Val
1               5                  10                  15

Thr Ile Ala Leu Ser Tyr Leu Leu Gly Ser Ser Ile Trp Leu Phe Ile
            20                  25                  30

Val Gln Phe Ile Ala Tyr Tyr Val Ser Gly Ile Tyr Phe Tyr Lys Leu
        35                  40                  45

Val Tyr Tyr Val Ala Gln Ser Glu Ile Val Ser Ile Gly Met Thr Leu
    50                  55                  60

Ile Phe Tyr Ile Met Asn Ile Val Leu Gly Phe Gly Gly Met Tyr Pro
65                  70                  75                  80

Ile Gln Trp Ala Leu Pro Phe Met Leu Ile Ser Leu Trp Phe Leu Ile
                85                  90                  95

Lys Phe Cys Val Asp Asn Ile Val Asp Glu Ala Phe Ile Phe Tyr Gly
            100                 105                 110

Ile Leu Ala Ala Phe Ser Leu Phe Ile Asp
        115                 120
```

<210> 18

<211> 570

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(570)

<223>

<400> 18

```
atg agg aaa cgt ttt tcc ttg cta aat ttt att gtt gtt act ttt att       48
Met Arg Lys Arg Phe Ser Leu Leu Asn Phe Ile Val Val Thr Phe Ile
1               5                   10                  15

ttc ttt ttc ttt att ctt ttt ccg ctt tta aac cat aag gga aaa gta       96
Phe Phe Phe Phe Ile Leu Phe Pro Leu Leu Asn His Lys Gly Lys Val
            20                  25                  30

gat gct aat tct agg cag agt gtt acc tac acc aaa gaa gaa ttt ata      144
Asp Ala Asn Ser Arg Gln Ser Val Thr Tyr Thr Lys Glu Glu Phe Ile
        35                  40                  45

caa aaa att gtg cca gat gcg caa gat cta gga aag tcg tac ggt att      192
Gln Lys Ile Val Pro Asp Ala Gln Asp Leu Gly Lys Ser Tyr Gly Ile
    50                  55                  60

cgt cct tca ttt att att gca cag gcg gct ttg gat tct gat ttc gga      240
Arg Pro Ser Phe Ile Ile Ala Gln Ala Ala Leu Asp Ser Asp Phe Gly
65                  70                  75                  80

gag aaa tat agc tat agt atc ata atc tgt tgg ttg ctt gca gaa cca      288
Glu Lys Tyr Ser Tyr Ser Ile Ile Ile Cys Trp Leu Leu Ala Glu Pro
                85                  90                  95

gga acg ccc tca att acc tta aat gat agt agt aca gga aaa aaa cag      336
Gly Thr Pro Ser Ile Thr Leu Asn Asp Ser Ser Thr Gly Lys Lys Gln
            100                 105                 110

gaa aag caa ttt act cat tat aaa tct tgg aag tat tca atg gat gat      384
Glu Lys Gln Phe Thr His Tyr Lys Ser Trp Lys Tyr Ser Met Asp Asp
        115                 120                 125

tac ctt gct cat ata aaa tct gga gcg aca ggc aaa aaa gat tca tat      432
Tyr Leu Ala His Ile Lys Ser Gly Ala Thr Gly Lys Lys Asp Ser Tyr
    130                 135                 140

act ata atg gtg tct gtt aaa aat cca aaa act tta gtg caa aaa tta      480
Thr Ile Met Val Ser Val Lys Asn Pro Lys Thr Leu Val Gln Lys Leu
145                 150                 155                 160

caa gat agt ggt ttt gat aat gac aaa aag tac gct aaa aaa atg acg      528
Gln Asp Ser Gly Phe Asp Asn Asp Lys Lys Tyr Ala Lys Lys Met Thr
                165                 170                 175
```

gaa atc att gat ttg tat gat tta aca aga tat gat aag tga 570
Glu Ile Ile Asp Leu Tyr Asp Leu Thr Arg Tyr Asp Lys
180 185

<210> 19

<211> 189

<212> PRT

<213> Streptococcus agalactiae

<400> 19

Met Arg Lys Arg Phe Ser Leu Leu Asn Phe Ile Val Val Thr Phe Ile
1 5 10 15

Phe Phe Phe Phe Ile Leu Phe Pro Leu Leu Asn His Lys Gly Lys Val
20 25 30

Asp Ala Asn Ser Arg Gln Ser Val Thr Tyr Thr Lys Glu Glu Phe Ile
35 40 45

Gln Lys Ile Val Pro Asp Ala Gln Asp Leu Gly Lys Ser Tyr Gly Ile
50 55 60

Arg Pro Ser Phe Ile Ile Ala Gln Ala Ala Leu Asp Ser Asp Phe Gly
65 70 75 80

Glu Lys Tyr Ser Tyr Ser Ile Ile Ile Cys Trp Leu Leu Ala Glu Pro
85 90 95

Gly Thr Pro Ser Ile Thr Leu Asn Asp Ser Ser Thr Gly Lys Lys Gln
100 105 110

Glu Lys Gln Phe Thr His Tyr Lys Ser Trp Lys Tyr Ser Met Asp Asp
115 120 125

Tyr Leu Ala His Ile Lys Ser Gly Ala Thr Gly Lys Lys Asp Ser Tyr
130 135 140

```
Thr Ile Met Val Ser Val Lys Asn Pro Lys Thr Leu Val Gln Lys Leu
145                 150                 155                 160

Gln Asp Ser Gly Phe Asp Asn Asp Lys Lys Tyr Ala Lys Lys Met Thr
                165                 170                 175

Glu Ile Ile Asp Leu Tyr Asp Leu Thr Arg Tyr Asp Lys
            180                 185
```

<210> 20

<211> 978

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(978)

<223>

<400> 20

```
atg ctt gtc atc att ttg atc att gta cta gct agt ctg aca gtg acg      48
Met Leu Val Ile Ile Leu Ile Ile Val Leu Ala Ser Leu Thr Val Thr
1               5                   10                  15

ata att tct tac cca aaa atg acg gaa tta aca aag tcc gtt gaa aaa      96
Ile Ile Ser Tyr Pro Lys Met Thr Glu Leu Thr Lys Ser Val Glu Lys
            20                  25                  30

caa ctt gaa gat aat gct gat aat cta tca gac caa ctg aca tat cag     144
Gln Leu Glu Asp Asn Ala Asp Asn Leu Ser Asp Gln Leu Thr Tyr Gln
        35                  40                  45

ata gaa gtg gcg caa aaa gat caa atc tac gtg act aat cag cta aac     192
Ile Glu Val Ala Gln Lys Asp Gln Ile Tyr Val Thr Asn Gln Leu Asn
    50                  55                  60

cgt atg caa cag gaa att atc agt cgc tta ccg ata tgc gta cag aat     240
```

```
Arg Met Gln Gln Glu Ile Ile Ser Arg Leu Pro Ile Cys Val Gln Asn
65                  70                  75                  80

aaa tca gca tta acg gag agt cga gat cga tca gac aaa cgc ttg gaa      288
Lys Ser Ala Leu Thr Glu Ser Arg Asp Arg Ser Asp Lys Arg Leu Glu
                85                  90                  95

ttg att aac tcc aat tta tct cag tca gtt cag aaa atg caa gat tca      336
Leu Ile Asn Ser Asn Leu Ser Gln Ser Val Gln Lys Met Gln Asp Ser
            100                 105                 110

atg aaa aac gct tgg atc aaa tgc gcc aaa ctg ttg agg aaa agc tgg      384
Met Lys Asn Ala Trp Ile Lys Cys Ala Lys Leu Leu Arg Lys Ser Trp
        115                 120                 125

aaa aaa cgc tac aaa cgc gtt gca aac ttc ttt gaa act gta tcg cgt      432
Lys Lys Arg Tyr Lys Arg Val Ala Asn Phe Phe Glu Thr Val Ser Arg
    130                 135                 140

caa cta gag agc gtc aat caa ggt ctg ggt aga tgg aaa ctg tgc caa      480
Gln Leu Glu Ser Val Asn Gln Gly Leu Gly Arg Trp Lys Leu Cys Gln
145                 150                 155                 160

gat gtt ggt acc act gaa caa agt ctg tca aat act aag aca agg gga      528
Asp Val Gly Thr Thr Glu Gln Ser Leu Ser Asn Thr Lys Thr Arg Gly
                165                 170                 175

ata tta ggg gag tta caa ctc ggt caa att ata gaa gat att atg aca      576
Ile Leu Gly Glu Leu Gln Leu Gly Gln Ile Ile Glu Asp Ile Met Thr
            180                 185                 190

gtt agt caa tat gag aga gaa ttt cct acg gtg tct ggc tct tct gag      624
Val Ser Gln Tyr Glu Arg Glu Phe Pro Thr Val Ser Gly Ser Ser Glu
        195                 200                 205

cgt gtt gaa tat gct att aaa tac ctg gaa atg gtc agg gag att ata      672
Arg Val Glu Tyr Ala Ile Lys Tyr Leu Glu Met Val Arg Glu Ile Ile
    210                 215                 220

tct att tgc cta ttg act cta agt ttc tct aga aga tta tta ccg att      720
Ser Ile Cys Leu Leu Thr Leu Ser Phe Ser Arg Arg Leu Leu Pro Ile
225                 230                 235                 240

ggg aga tgc tta tgg aat tgg gtg acc agg ttc aaa tgg aac tct att      768
Gly Arg Cys Leu Trp Asn Trp Val Thr Arg Phe Lys Trp Asn Ser Ile
                245                 250                 255

cgt aat ctt tac tgg gca agt att cgt aaa ttt gca aaa gat ata aac      816
Arg Asn Leu Tyr Trp Ala Ser Ile Arg Lys Phe Ala Lys Asp Ile Asn
            260                 265                 270
```

```
aat aag tac tta aat cct cct gaa acg aca aat ttt ggt atc atg ttc      864
Asn Lys Tyr Leu Asn Pro Pro Glu Thr Thr Asn Phe Gly Ile Met Phe
        275                 280                 285

tta cca act gaa ggg ctc tat tct gaa gtg gta aga aat gca aca ttc      912
Leu Pro Thr Glu Gly Leu Tyr Ser Glu Val Val Arg Asn Ala Thr Phe
    290                 295                 300

ttt gat agt cta aga cgt gac gaa aat att gta gta gct gga ccg tca      960
Phe Asp Ser Leu Arg Arg Asp Glu Asn Ile Val Val Ala Gly Pro Ser
305                 310                 315                 320

acc tta tct gct tac taa                                             978
Thr Leu Ser Ala Tyr
                325
```

<210> 21

<211> 325

<212> PRT

<213> Streptococcus agalactiae

<400> 21

```
Met Leu Val Ile Ile Leu Ile Ile Val Leu Ala Ser Leu Thr Val Thr
1               5                   10                  15

Ile Ile Ser Tyr Pro Lys Met Thr Glu Leu Thr Lys Ser Val Glu Lys
            20                  25                  30

Gln Leu Glu Asp Asn Ala Asp Asn Leu Ser Asp Gln Leu Thr Tyr Gln
        35                  40                  45

Ile Glu Val Ala Gln Lys Asp Gln Ile Tyr Val Thr Asn Gln Leu Asn
    50                  55                  60

Arg Met Gln Gln Glu Ile Ile Ser Arg Leu Pro Ile Cys Val Gln Asn
65                  70                  75                  80

Lys Ser Ala Leu Thr Glu Ser Arg Asp Arg Ser Asp Lys Arg Leu Glu
                85                  90                  95
```

```
Leu Ile Asn Ser Asn Leu Ser Gln Ser Val Gln Lys Met Gln Asp Ser
            100                 105                 110

Met Lys Asn Ala Trp Ile Lys Cys Ala Lys Leu Leu Arg Lys Ser Trp
        115                 120                 125

Lys Lys Arg Tyr Lys Arg Val Ala Asn Phe Phe Glu Thr Val Ser Arg
    130                 135                 140

Gln Leu Glu Ser Val Asn Gln Gly Leu Gly Arg Trp Lys Leu Cys Gln
145                 150                 155                 160

Asp Val Gly Thr Thr Glu Gln Ser Leu Ser Asn Thr Lys Thr Arg Gly
                165                 170                 175

Ile Leu Gly Glu Leu Gln Leu Gly Gln Ile Ile Glu Asp Ile Met Thr
            180                 185                 190

Val Ser Gln Tyr Glu Arg Glu Phe Pro Thr Val Ser Gly Ser Ser Glu
        195                 200                 205

Arg Val Glu Tyr Ala Ile Lys Tyr Leu Glu Met Val Arg Glu Ile Ile
    210                 215                 220

Ser Ile Cys Leu Leu Thr Leu Ser Phe Ser Arg Arg Leu Leu Pro Ile
225                 230                 235                 240

Gly Arg Cys Leu Trp Asn Trp Val Thr Arg Phe Lys Trp Asn Ser Ile
                245                 250                 255

Arg Asn Leu Tyr Trp Ala Ser Ile Arg Lys Phe Ala Lys Asp Ile Asn
            260                 265                 270

Asn Lys Tyr Leu Asn Pro Pro Glu Thr Thr Asn Phe Gly Ile Met Phe
        275                 280                 285

Leu Pro Thr Glu Gly Leu Tyr Ser Glu Val Val Arg Asn Ala Thr Phe
    290                 295                 300
```

```
Phe Asp Ser Leu Arg Arg Asp Glu Asn Ile Val Val Ala Gly Pro Ser
305                 310                 315                 320

Thr Leu Ser Ala Tyr
                325
```

<210> 22

<211> 579

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(579)

<223>

<400> 22

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atg cga aaa gaa gtg aca cca gag atg ctt aac tat aat aag tat cct       48
Met Arg Lys Glu Val Thr Pro Glu Met Leu Asn Tyr Asn Lys Tyr Pro
1               5                   10                  15

ggc cca cag ttt att cac ttt gaa aat atc gtt aaa agt gat gat att       96
Gly Pro Gln Phe Ile His Phe Glu Asn Ile Val Lys Ser Asp Asp Ile
            20                  25                  30

gaa ttt caa ctt gtt att aat gaa aaa tca gct ttt gat gtg act gtc      144
Glu Phe Gln Leu Val Ile Asn Glu Lys Ser Ala Phe Asp Val Thr Val
        35                  40                  45

ttt gga caa cgt ttt tct gag att tta tta aaa tat gat ttt atc gtt      192
Phe Gly Gln Arg Phe Ser Glu Ile Leu Leu Lys Tyr Asp Phe Ile Val
    50                  55                  60

ggc gat tgg ggt aac gag cag ttg agg cta aga ggc ttt tac aaa gat      240
Gly Asp Trp Gly Asn Glu Gln Leu Arg Leu Arg Gly Phe Tyr Lys Asp
65                  70                  75                  80

gct agt acg att aga aaa aat agc cgg att tca cgt tta gaa gat tat      288
```

```
Ala Ser Thr Ile Arg Lys Asn Ser Arg Ile Ser Arg Leu Glu Asp Tyr
                85                  90                  95

att aaa gag tat tgt aac ttt ggt tgt gct tat ttt gtg ttg gag aat      336
Ile Lys Glu Tyr Cys Asn Phe Gly Cys Ala Tyr Phe Val Leu Glu Asn
            100                 105                 110

cca aat cct aga gat att aaa ttt gat gat gaa aga cct cat aag cgt      384
Pro Asn Pro Arg Asp Ile Lys Phe Asp Asp Glu Arg Pro His Lys Arg
        115                 120                 125

cgt aag tca aga tcc aaa tca caa tca tca aag tca caa act aga aat      432
Arg Lys Ser Arg Ser Lys Ser Gln Ser Ser Lys Ser Gln Thr Arg Asn
    130                 135                 140

aat cgt tcc cag tca aat gcc aat gct cat ttt aca agt aaa aag cgt      480
Asn Arg Ser Gln Ser Asn Ala Asn Ala His Phe Thr Ser Lys Lys Arg
145                 150                 155                 160

aaa gac aca aaa cgc cgt caa gaa cgt cat att aaa gaa gag caa gat      528
Lys Asp Thr Lys Arg Arg Gln Glu Arg His Ile Lys Glu Glu Gln Asp
                165                 170                 175

aag gaa atg acc tct gca aag cag cat ttg tta ttc gta aga aaa aat      576
Lys Glu Met Thr Ser Ala Lys Gln His Leu Leu Phe Val Arg Lys Asn
            180                 185                 190

taa                                                                 579
```

<210> 23

<211> 192

<212> PRT

<213> Streptococcus agalactiae

<400> 23

```
Met Arg Lys Glu Val Thr Pro Glu Met Leu Asn Tyr Asn Lys Tyr Pro
1               5                   10                  15

Gly Pro Gln Phe Ile His Phe Glu Asn Ile Val Lys Ser Asp Asp Ile
            20                  25                  30
```

```
Glu Phe Gln Leu Val Ile Asn Glu Lys Ser Ala Phe Asp Val Thr Val
        35                  40                  45

Phe Gly Gln Arg Phe Ser Glu Ile Leu Leu Lys Tyr Asp Phe Ile Val
    50                  55                  60

Gly Asp Trp Gly Asn Glu Gln Leu Arg Leu Arg Gly Phe Tyr Lys Asp
65                  70                  75                  80

Ala Ser Thr Ile Arg Lys Asn Ser Arg Ile Ser Arg Leu Glu Asp Tyr
                85                  90                  95

Ile Lys Glu Tyr Cys Asn Phe Gly Cys Ala Tyr Phe Val Leu Glu Asn
            100                 105                 110

Pro Asn Pro Arg Asp Ile Lys Phe Asp Asp Glu Arg Pro His Lys Arg
        115                 120                 125

Arg Lys Ser Arg Ser Lys Ser Gln Ser Ser Lys Ser Gln Thr Arg Asn
    130                 135                 140

Asn Arg Ser Gln Ser Asn Ala Asn Ala His Phe Thr Ser Lys Lys Arg
145                 150                 155                 160

Lys Asp Thr Lys Arg Arg Gln Glu Arg His Ile Lys Glu Glu Gln Asp
                165                 170                 175

Lys Glu Met Thr Ser Ala Lys Gln His Leu Leu Phe Val Arg Lys Asn
            180                 185                 190
```

<210> 24

<211> 609

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(609)

<223>

<400> 24

```
atg aca ata aaa aaa gtg tta agt gta aca gga att att tta gtg aca      48
Met Thr Ile Lys Lys Val Leu Ser Val Thr Gly Ile Ile Leu Val Thr
1               5                  10                  15

gta gcg tct cta gct gct tgt agc tca aaa tct cat act act aag acg      96
Val Ala Ser Leu Ala Ala Cys Ser Ser Lys Ser His Thr Thr Lys Thr
            20                  25                  30

ggc aaa aaa gaa gtt aat ttt gca act gtt gga aca acg gca cct ttt     144
Gly Lys Lys Glu Val Asn Phe Ala Thr Val Gly Thr Thr Ala Pro Phe
        35                  40                  45

tct tat gtg aag gat ggg aaa ctg act ggc ttt gat att gaa gta gcc     192
Ser Tyr Val Lys Asp Gly Lys Leu Thr Gly Phe Asp Ile Glu Val Ala
    50                  55                  60

aaa gct gtt ttt aaa ggt tca gat aac tat aaa gtc act ttt aaa aaa     240
Lys Ala Val Phe Lys Gly Ser Asp Asn Tyr Lys Val Thr Phe Lys Lys
65                  70                  75                  80

aca gaa tgg tca tcg gta ttt acc ggc att gat tca gga aag ttt caa     288
Thr Glu Trp Ser Ser Val Phe Thr Gly Ile Asp Ser Gly Lys Phe Gln
                85                  90                  95

atg ggt gga aat aat att tct tat tca tca gag aga tct caa aaa tay     336
Met Gly Gly Asn Asn Ile Ser Tyr Ser Ser Glu Arg Ser Gln Lys Tyr
            100                 105                 110

tta ttt tca tac cca ata ggc tct act cct tca gtt tta gca gtt cct     384
Leu Phe Ser Tyr Pro Ile Gly Ser Thr Pro Ser Val Leu Ala Val Pro
        115                 120                 125

aag aat agt aat atc aaa gct tat aat gat att agt ggt cat aaa aca     432
Lys Asn Ser Asn Ile Lys Ala Tyr Asn Asp Ile Ser Gly His Lys Thr
    130                 135                 140

cag gtt gtc caa gga acg aca act gcc aag caa tta gaa aat ttc aat     480
Gln Val Val Gln Gly Thr Thr Thr Ala Lys Gln Leu Glu Asn Phe Asn
145                 150                 155                 160

aaa gag cat cag aaa aat cct gtt act cta aaa tat act aat gaa aat     528
```

```
Lys Glu His Gln Lys Asn Pro Val Thr Leu Lys Tyr Thr Asn Glu Asn
                165                 170                 175

att aca cag att cta acg aat ttg agt gat gga aaa gct gat ttt aaa      576
Ile Thr Gln Ile Leu Thr Asn Leu Ser Asp Gly Lys Ala Asp Phe Lys
            180                 185                 190

ctt ttg acg gac caa ctg tta acg cta tta taa                          609
Leu Leu Thr Asp Gln Leu Leu Thr Leu Leu
        195                 200
```

<210> 25

<211> 202

<212> PRT

<213> Streptococcus agalactiae

<400> 25

```
Met Thr Ile Lys Lys Val Leu Ser Val Thr Gly Ile Ile Leu Val Thr
1               5                   10                  15

Val Ala Ser Leu Ala Ala Cys Ser Ser Lys Ser His Thr Thr Lys Thr
            20                  25                  30

Gly Lys Lys Glu Val Asn Phe Ala Thr Val Gly Thr Thr Ala Pro Phe
        35                  40                  45

Ser Tyr Val Lys Asp Gly Lys Leu Thr Gly Phe Asp Ile Glu Val Ala
    50                  55                  60

Lys Ala Val Phe Lys Gly Ser Asp Asn Tyr Lys Val Thr Phe Lys Lys
65                  70                  75                  80

Thr Glu Trp Ser Ser Val Phe Thr Gly Ile Asp Ser Gly Lys Phe Gln
                85                  90                  95

Met Gly Gly Asn Asn Ile Ser Tyr Ser Ser Glu Arg Ser Gln Lys Tyr
            100                 105                 110
```

```
Leu Phe Ser Tyr Pro Ile Gly Ser Thr Pro Ser Val Leu Ala Val Pro
        115                 120                 125

Lys Asn Ser Asn Ile Lys Ala Tyr Asn Asp Ile Ser Gly His Lys Thr
    130                 135                 140

Gln Val Val Gln Gly Thr Thr Thr Ala Lys Gln Leu Glu Asn Phe Asn
145                 150                 155                 160

Lys Glu His Gln Lys Asn Pro Val Thr Leu Lys Tyr Thr Asn Glu Asn
                165                 170                 175

Ile Thr Gln Ile Leu Thr Asn Leu Ser Asp Gly Lys Ala Asp Phe Lys
            180                 185                 190

Leu Leu Thr Asp Gln Leu Leu Thr Leu Leu
        195                 200
```

<210> 26

<211> 357

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(357)

<223>

<400> 26

```
atg aag aat ata aca aag cta tca act gtt gct tta agc cta cta ctt      48
Met Lys Asn Ile Thr Lys Leu Ser Thr Val Ala Leu Ser Leu Leu Leu
1               5                   10                  15

tgt acg gcg tgt gct gca tca aac acg tct aca tct aaa aca cag tct      96
```

```
Cys Thr Ala Cys Ala Ala Ser Asn Thr Ser Thr Ser Lys Thr Gln Ser
            20                  25                  30

cat cat cct aaa caa act aaa ctc aca gat aag caa aaa gaa gaa ccc      144
His His Pro Lys Gln Thr Lys Leu Thr Asp Lys Gln Lys Glu Glu Pro
        35                  40                  45

aaa aac aaa gaa gct gct gat caa gag atg cat ccc caa ggc gct gtt      192
Lys Asn Lys Glu Ala Ala Asp Gln Glu Met His Pro Gln Gly Ala Val
    50                  55                  60

gat ttg aca aaa tat aag gca aaa ccg gtc aaa gat tat gga aaa aaa      240
Asp Leu Thr Lys Tyr Lys Ala Lys Pro Val Lys Asp Tyr Gly Lys Lys
65                  70                  75                  80

atc gat gtt ggt gat ggc aag aaa atg aac att tat gaa act ggt cag      288
Ile Asp Val Gly Asp Gly Lys Lys Met Asn Ile Tyr Glu Thr Gly Gln
                85                  90                  95

gga aaa att cca att gtt ttt att cct ggt caa gct gag att cgc cac      336
Gly Lys Ile Pro Ile Val Phe Ile Pro Gly Gln Ala Glu Ile Arg His
            100                 105                 110

gct atg ctt ata aga att taa                                         357
Ala Met Leu Ile Arg Ile
        115
```

<210> 27

<211> 118

<212> PRT

<213> Streptococcus agalactiae

<400> 27

```
Met Lys Asn Ile Thr Lys Leu Ser Thr Val Ala Leu Ser Leu Leu Leu
1               5                   10                  15

Cys Thr Ala Cys Ala Ala Ser Asn Thr Ser Thr Ser Lys Thr Gln Ser
            20                  25                  30

His His Pro Lys Gln Thr Lys Leu Thr Asp Lys Gln Lys Glu Glu Pro
        35                  40                  45
```

```
Lys Asn Lys Glu Ala Ala Asp Gln Glu Met His Pro Gln Gly Ala Val
    50                  55                  60

Asp Leu Thr Lys Tyr Lys Ala Lys Pro Val Lys Asp Tyr Gly Lys Lys
65                  70                  75                  80

Ile Asp Val Gly Asp Gly Lys Lys Met Asn Ile Tyr Glu Thr Gly Gln
                85                  90                  95

Gly Lys Ile Pro Ile Val Phe Ile Pro Gly Gln Ala Glu Ile Arg His
            100                 105                 110

Ala Met Leu Ile Arg Ile
        115
```

<210> 28

<211> 1191

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(1191)

<223>

<400> 28

```
gtg aat gaa tcg acc atc aga aaa gaa ttt aaa ata gtt gtt ttt aaa      48
Val Asn Glu Ser Thr Ile Arg Lys Glu Phe Lys Ile Val Val Phe Lys
1               5                   10                  15

tgg atc tta aat aat caa gca gtt att gct ctc atg att acc ttt ttg      96
Trp Ile Leu Asn Asn Gln Ala Val Ile Ala Leu Met Ile Thr Phe Leu
            20                  25                  30

gta ttt tta acg att ttt att ttt acc aaa atc tct ttt atg ttt aaa     144
```

```
Val Phe Leu Thr Ile Phe Ile Phe Thr Lys Ile Ser Phe Met Phe Lys
        35                  40                  45

cct gtg ttt gat ttt ctt gct gtg ctg ata ttg ccg ctt gta att tct      192
Pro Val Phe Asp Phe Leu Ala Val Leu Ile Leu Pro Leu Val Ile Ser
    50                  55                  60

ggc ttg ctt tat tac cta tta aaa cct atg gtt aca ttt tta gag aag      240
Gly Leu Leu Tyr Tyr Leu Leu Lys Pro Met Val Thr Phe Leu Glu Lys
65                  70                  75                  80

cgg gga att aag cgt gta aca gcg ata tta tca gtt ttt act att ata      288
Arg Gly Ile Lys Arg Val Thr Ala Ile Leu Ser Val Phe Thr Ile Ile
                85                  90                  95

atc ctt ctg tta att tgg gca atg tct agt ttt att ccc atg atg agt      336
Ile Leu Leu Leu Ile Trp Ala Met Ser Ser Phe Ile Pro Met Met Ser
            100                 105                 110

aat caa tta cgc cat ttt atg gaa gat ctc cct tca tat gtg aat aaa      384
Asn Gln Leu Arg His Phe Met Glu Asp Leu Pro Ser Tyr Val Asn Lys
        115                 120                 125

gtg caa atg gaa aca agt tcg ttt ata gat cac aac cct tgg tta aaa      432
Val Gln Met Glu Thr Ser Ser Phe Ile Asp His Asn Pro Trp Leu Lys
    130                 135                 140

tct tat aaa ggg gaa ata tcg agc atg tta tct aat atc agt agc caa      480
Ser Tyr Lys Gly Glu Ile Ser Ser Met Leu Ser Asn Ile Ser Ser Gln
145                 150                 155                 160

gcg gtc tct tat gct gaa aaa ttt tca aag aat gtt tta gat tgg gca      528
Ala Val Ser Tyr Ala Glu Lys Phe Ser Lys Asn Val Leu Asp Trp Ala
                165                 170                 175

gga aat tta gct agt aca gtt gca cgt gtg aca gta gca aca atc atg      576
Gly Asn Leu Ala Ser Thr Val Ala Arg Val Thr Val Ala Thr Ile Met
            180                 185                 190

gct ccc ttt att ttg ttt tat ctt tta aga gat agt cgc aac atg aag      624
Ala Pro Phe Ile Leu Phe Tyr Leu Leu Arg Asp Ser Arg Asn Met Lys
        195                 200                 205

aat ggt ttc tta atg gtt tta cca acc aaa cta cgc caa cca gct gat      672
Asn Gly Phe Leu Met Val Leu Pro Thr Lys Leu Arg Gln Pro Ala Asp
    210                 215                 220

cgt att ttg cga gaa atg aat agt caa atg tca gga tat gtg caa gga      720
Arg Ile Leu Arg Glu Met Asn Ser Gln Met Ser Gly Tyr Val Gln Gly
225                 230                 235                 240
```

```
caa atc att gtt gct att act gtt ggt gtt att ttt tca ata atg tat      768
Gln Ile Ile Val Ala Ile Thr Val Gly Val Ile Phe Ser Ile Met Tyr
                245                 250                 255

agt att ata ggc ctt aga tat ggc gtg aca tta ggg att att gcc ggt      816
Ser Ile Ile Gly Leu Arg Tyr Gly Val Thr Leu Gly Ile Ile Ala Gly
            260                 265                 270

gtg tta aat atg gtt ccc tat ttg gga agt ttt gtc gcc caa att cca      864
Val Leu Asn Met Val Pro Tyr Leu Gly Ser Phe Val Ala Gln Ile Pro
        275                 280                 285

gtg ttt atc tta gcg ctt gtc gca gga cct gtt atg gtt gtt aaa gtt      912
Val Phe Ile Leu Ala Leu Val Ala Gly Pro Val Met Val Val Lys Val
    290                 295                 300

gcg att gtt ttt gtt att gag caa act cta gag gga cgc ttt gtc tca      960
Ala Ile Val Phe Val Ile Glu Gln Thr Leu Glu Gly Arg Phe Val Ser
305                 310                 315                 320

cct ttg gtt tta ggt aat aaa ctt agc att cat cca att aca att atg     1008
Pro Leu Val Leu Gly Asn Lys Leu Ser Ile His Pro Ile Thr Ile Met
                325                 330                 335

ttt att tta tta acc tct gga gcg atg ttt ggt gtt tgg gga gta ttc     1056
Phe Ile Leu Leu Thr Ser Gly Ala Met Phe Gly Val Trp Gly Val Phe
            340                 345                 350

ctc agt att ccg att tat gca tct atc aaa gtt gtt gtt aaa gaa ttg     1104
Leu Ser Ile Pro Ile Tyr Ala Ser Ile Lys Val Val Val Lys Glu Leu
        355                 360                 365

ttt gat tgg tac aaa gct gtc agt ggg cta tat aca ata gat gtt gtt     1152
Phe Asp Trp Tyr Lys Ala Val Ser Gly Leu Tyr Thr Ile Asp Val Val
    370                 375                 380

act gaa gaa aga agt gaa gaa gtt aaa aat gtt gaa tag                 1191
Thr Glu Glu Arg Ser Glu Glu Val Lys Asn Val Glu
385                 390                 395
```

<210> 29

<211> 396

<212> PRT

<213> Streptococcus agalactiae

<400> 29

```
Val Asn Glu Ser Thr Ile Arg Lys Glu Phe Lys Ile Val Val Phe Lys
1               5                  10                  15

Trp Ile Leu Asn Asn Gln Ala Val Ile Ala Leu Met Ile Thr Phe Leu
            20                  25                  30

Val Phe Leu Thr Ile Phe Ile Phe Thr Lys Ile Ser Phe Met Phe Lys
        35                  40                  45

Pro Val Phe Asp Phe Leu Ala Val Leu Ile Leu Pro Leu Val Ile Ser
    50                  55                  60

Gly Leu Leu Tyr Tyr Leu Leu Lys Pro Met Val Thr Phe Leu Glu Lys
65                  70                  75                  80

Arg Gly Ile Lys Arg Val Thr Ala Ile Leu Ser Val Phe Thr Ile Ile
                85                  90                  95

Ile Leu Leu Leu Ile Trp Ala Met Ser Ser Phe Ile Pro Met Met Ser
            100                 105                 110

Asn Gln Leu Arg His Phe Met Glu Asp Leu Pro Ser Tyr Val Asn Lys
        115                 120                 125

Val Gln Met Glu Thr Ser Ser Phe Ile Asp His Asn Pro Trp Leu Lys
    130                 135                 140

Ser Tyr Lys Gly Glu Ile Ser Ser Met Leu Ser Asn Ile Ser Ser Gln
145                 150                 155                 160

Ala Val Ser Tyr Ala Glu Lys Phe Ser Lys Asn Val Leu Asp Trp Ala
                165                 170                 175

Gly Asn Leu Ala Ser Thr Val Ala Arg Val Thr Val Ala Thr Ile Met
            180                 185                 190
```

```
Ala Pro Phe Ile Leu Phe Tyr Leu Leu Arg Asp Ser Arg Asn Met Lys
        195                 200                 205

Asn Gly Phe Leu Met Val Leu Pro Thr Lys Leu Arg Gln Pro Ala Asp
    210                 215                 220

Arg Ile Leu Arg Glu Met Asn Ser Gln Met Ser Gly Tyr Val Gln Gly
225                 230                 235                 240

Gln Ile Ile Val Ala Ile Thr Val Gly Val Ile Phe Ser Ile Met Tyr
            245                 250                 255

Ser Ile Ile Gly Leu Arg Tyr Gly Val Thr Leu Gly Ile Ile Ala Gly
            260                 265                 270

Val Leu Asn Met Val Pro Tyr Leu Gly Ser Phe Val Ala Gln Ile Pro
        275                 280                 285

Val Phe Ile Leu Ala Leu Val Ala Gly Pro Val Met Val Val Lys Val
    290                 295                 300

Ala Ile Val Phe Val Ile Glu Gln Thr Leu Glu Gly Arg Phe Val Ser
305                 310                 315                 320

Pro Leu Val Leu Gly Asn Lys Leu Ser Ile His Pro Ile Thr Ile Met
                325                 330                 335

Phe Ile Leu Leu Thr Ser Gly Ala Met Phe Gly Val Trp Gly Val Phe
            340                 345                 350

Leu Ser Ile Pro Ile Tyr Ala Ser Ile Lys Val Val Val Lys Glu Leu
        355                 360                 365

Phe Asp Trp Tyr Lys Ala Val Ser Gly Leu Tyr Thr Ile Asp Val Val
    370                 375                 380

Thr Glu Glu Arg Ser Glu Glu Val Lys Asn Val Glu
385                 390                 395
```

<210> 30

<211> 1230

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(1230)

<223>

<220>

<221> misc_feature

<222> (357)..(357)

<223> The 'Xaa' at location 357 stands for Thr, or Ile.

<400> 30

```
atg ttt atg gga atc cca caa tat ttc ttc tac ctt atc tta gct gtc       48
Met Phe Met Gly Ile Pro Gln Tyr Phe Phe Tyr Leu Ile Leu Ala Val
1               5                  10                  15

cta cca att tac atc ggc tta ttc ttt aag aag cgt ttt gcc tta tat       96
Leu Pro Ile Tyr Ile Gly Leu Phe Phe Lys Lys Arg Phe Ala Leu Tyr
            20                  25                  30

gag att att ttt agt cta agt ttt att gta atg atg ttg act ggt agt      144
Glu Ile Ile Phe Ser Leu Ser Phe Ile Val Met Met Leu Thr Gly Ser
        35                  40                  45

act ttt aat caa ttg aag tca cta ttg gca tac gtt gtc gga cag tct      192
Thr Phe Asn Gln Leu Lys Ser Leu Leu Ala Tyr Val Val Gly Gln Ser
    50                  55                  60

ctg cta gtt ttt atc tat aaa gct tac cgg aaa cga ttt aat cat act      240
Leu Leu Val Phe Ile Tyr Lys Ala Tyr Arg Lys Arg Phe Asn His Thr
65                  70                  75                  80

ttg gtc ttt tat gta acg gtt tgt tta tct att ttt ccg cta ttt ttg      288
Leu Val Phe Tyr Val Thr Val Cys Leu Ser Ile Phe Pro Leu Phe Leu
                85                  90                  95
```

```
gta aaa tta att cca gct ata tct gag gat ggg cat cag tca ctt ttt      336
Val Lys Leu Ile Pro Ala Ile Ser Glu Asp Gly His Gln Ser Leu Phe
            100                 105                 110

ggg ttt cta gga att tct tac ctt act ttt aga gct gtt gct atg att      384
Gly Phe Leu Gly Ile Ser Tyr Leu Thr Phe Arg Ala Val Ala Met Ile
        115                 120                 125

att gaa atg aga gac ggt gtc ttg aaa gaa ttt act tta tgg gaa ttc      432
Ile Glu Met Arg Asp Gly Val Leu Lys Glu Phe Thr Leu Trp Glu Phe
    130                 135                 140

tta aga ttt tta ctc ttc ttt cca act ttc tca agt gga cca att gat      480
Leu Arg Phe Leu Leu Phe Phe Pro Thr Phe Ser Ser Gly Pro Ile Asp
145                 150                 155                 160

cgt ttt aaa cga ttc aat gag gat tac att aat atc cca gat cga aac      528
Arg Phe Lys Arg Phe Asn Glu Asp Tyr Ile Asn Ile Pro Asp Arg Asn
                165                 170                 175

gaa ctc cta gat atg tta ggt caa gcg att cat tat ttg atg tta ggt      576
Glu Leu Leu Asp Met Leu Gly Gln Ala Ile His Tyr Leu Met Leu Gly
            180                 185                 190

ttt ctc tat aag ttt att tta gcc tat att ttt gga agt ctg att atg      624
Phe Leu Tyr Lys Phe Ile Leu Ala Tyr Ile Phe Gly Ser Leu Ile Met
        195                 200                 205

cct cct cta aaa gaa tta gcg cta gaa cag ggt ggt gtg ttt aat tgg      672
Pro Pro Leu Lys Glu Leu Ala Leu Glu Gln Gly Gly Val Phe Asn Trp
    210                 215                 220

cca aca ctt ggg gtt atg tat gcc ttt ggt ttt gat ttg ttc ttt gat      720
Pro Thr Leu Gly Val Met Tyr Ala Phe Gly Phe Asp Leu Phe Phe Asp
225                 230                 235                 240

ttt gca ggt tac aca atg ttt gcg ttg gct att tct aac cta atg ggg      768
Phe Ala Gly Tyr Thr Met Phe Ala Leu Ala Ile Ser Asn Leu Met Gly
                245                 250                 255

att aag tct ccg att aac ttt gac aaa cct ttc aaa tca cgc gac cta      816
Ile Lys Ser Pro Ile Asn Phe Asp Lys Pro Phe Lys Ser Arg Asp Leu
            260                 265                 270

aaa gaa ttt tgg aat aga tgg cat atg agc ctt tct ttc tgg ttt aga      864
Lys Glu Phe Trp Asn Arg Trp His Met Ser Leu Ser Phe Trp Phe Arg
        275                 280                 285

gac ttt gtt ttc atg agg ctt gtt aag ctt tta gtt aaa aat aaa gtt      912
Asp Phe Val Phe Met Arg Leu Val Lys Leu Leu Val Lys Asn Lys Val
    290                 295                 300
```

```
ttt aaa aac cgt aat gtt act tca agt gta gct tat att atc aat atg      960
Phe Lys Asn Arg Asn Val Thr Ser Ser Val Ala Tyr Ile Ile Asn Met
305                 310                 315                 320

ctt ctt atg gga ttc tgg cat ggg tta act tgg tac tat ata gcc tat     1008
Leu Leu Met Gly Phe Trp His Gly Leu Thr Trp Tyr Tyr Ile Ala Tyr
                325                 330                 335

ggt ctc ttt cat ggg att ggc cta gtt att aat gac gct tgg gta cgt     1056
Gly Leu Phe His Gly Ile Gly Leu Val Ile Asn Asp Ala Trp Val Arg
            340                 345                 350

aag aag aaa aat ayt aat aaa gaa aga aga ttg gct aaa aaa cca ctt     1104
Lys Lys Lys Asn Xaa Asn Lys Glu Arg Arg Leu Ala Lys Lys Pro Leu
        355                 360                 365

tta cca gaa aac aaa tgg act tat gct ttg ggt gtc ttc atc acc ttt     1152
Leu Pro Glu Asn Lys Trp Thr Tyr Ala Leu Gly Val Phe Ile Thr Phe
    370                 375                 380

aat gta gtt atg ttt tct ttc ttg att ttt tca gga ttt tta gat ctt     1200
Asn Val Val Met Phe Ser Phe Leu Ile Phe Ser Gly Phe Leu Asp Leu
385                 390                 395                 400

ttg tgg ttc cca caa ccg cat aac aaa taa                            1230
Leu Trp Phe Pro Gln Pro His Asn Lys
                405
```

<210> 31

<211> 409

<212> PRT

<213> Streptococcus agalactiae

<220>

<221> misc_feature

<222> (357)..(357)

<223> The 'Xaa' at location 357 stands for Thr, or Ile.

<400> 31

```
Met Phe Met Gly Ile Pro Gln Tyr Phe Phe Tyr Leu Ile Leu Ala Val
1               5                   10                  15
```

```
Leu Pro Ile Tyr Ile Gly Leu Phe Phe Lys Lys Arg Phe Ala Leu Tyr
            20                  25                  30

Glu Ile Ile Phe Ser Leu Ser Phe Ile Val Met Met Leu Thr Gly Ser
        35                  40                  45

Thr Phe Asn Gln Leu Lys Ser Leu Leu Ala Tyr Val Val Gly Gln Ser
    50                  55                  60

Leu Leu Val Phe Ile Tyr Lys Ala Tyr Arg Lys Arg Phe Asn His Thr
65                  70                  75                  80

Leu Val Phe Tyr Val Thr Val Cys Leu Ser Ile Phe Pro Leu Phe Leu
                85                  90                  95

Val Lys Leu Ile Pro Ala Ile Ser Glu Asp Gly His Gln Ser Leu Phe
            100                 105                 110

Gly Phe Leu Gly Ile Ser Tyr Leu Thr Phe Arg Ala Val Ala Met Ile
        115                 120                 125

Ile Glu Met Arg Asp Gly Val Leu Lys Glu Phe Thr Leu Trp Glu Phe
    130                 135                 140

Leu Arg Phe Leu Leu Phe Phe Pro Thr Phe Ser Ser Gly Pro Ile Asp
145                 150                 155                 160

Arg Phe Lys Arg Phe Asn Glu Asp Tyr Ile Asn Ile Pro Asp Arg Asn
                165                 170                 175

Glu Leu Leu Asp Met Leu Gly Gln Ala Ile His Tyr Leu Met Leu Gly
            180                 185                 190

Phe Leu Tyr Lys Phe Ile Leu Ala Tyr Ile Phe Gly Ser Leu Ile Met
        195                 200                 205

Pro Pro Leu Lys Glu Leu Ala Leu Glu Gln Gly Gly Val Phe Asn Trp
    210                 215                 220
```

```
Pro Thr Leu Gly Val Met Tyr Ala Phe Gly Phe Asp Leu Phe Phe Asp
225                 230                 235                 240

Phe Ala Gly Tyr Thr Met Phe Ala Leu Ala Ile Ser Asn Leu Met Gly
                245                 250                 255

Ile Lys Ser Pro Ile Asn Phe Asp Lys Pro Phe Lys Ser Arg Asp Leu
            260                 265                 270

Lys Glu Phe Trp Asn Arg Trp His Met Ser Leu Ser Phe Trp Phe Arg
        275                 280                 285

Asp Phe Val Phe Met Arg Leu Val Lys Leu Leu Val Lys Asn Lys Val
    290                 295                 300

Phe Lys Asn Arg Asn Val Thr Ser Ser Val Ala Tyr Ile Ile Asn Met
305                 310                 315                 320

Leu Leu Met Gly Phe Trp His Gly Leu Thr Trp Tyr Tyr Ile Ala Tyr
                325                 330                 335

Gly Leu Phe His Gly Ile Gly Leu Val Ile Asn Asp Ala Trp Val Arg
            340                 345                 350

Lys Lys Lys Asn Xaa Asn Lys Glu Arg Arg Leu Ala Lys Lys Pro Leu
        355                 360                 365

Leu Pro Glu Asn Lys Trp Thr Tyr Ala Leu Gly Val Phe Ile Thr Phe
    370                 375                 380

Asn Val Val Met Phe Ser Phe Leu Ile Phe Ser Gly Phe Leu Asp Leu
385                 390                 395                 400

Leu Trp Phe Pro Gln Pro His Asn Lys
                405
```

<210> 32

<211> 100

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(99)

<223>

<400> 32

```
atg aat aaa ata acg aca tta tca acc atc gcc ctg act tta atg ctt       48
Met Asn Lys Ile Thr Thr Leu Ser Thr Ile Ala Leu Thr Leu Met Leu
1               5                   10                  15

tgc gtt gga tgt tct gcc aat aaa gat aat caa aaa act aaa act gag       96
Cys Val Gly Cys Ser Ala Asn Lys Asp Asn Gln Lys Thr Lys Thr Glu
            20                  25                  30

gat c                                                               100
Asp
```

<210> 33

<211> 33

<212> PRT

<213> Streptococcus agalactiae

<400> 33

```
Met Asn Lys Ile Thr Thr Leu Ser Thr Ile Ala Leu Thr Leu Met Leu
1               5                   10                  15

Cys Val Gly Cys Ser Ala Asn Lys Asp Asn Gln Lys Thr Lys Thr Glu
            20                  25                  30
```

Asp

<210> 34

<211> 654

<212> DNA

<213> Streptococcus agalactiae

<220>

<221> CDS

<222> (1)..(654)

<223>

<400> 34

```
gat cga ggc tat caa gaa gca atg gct aaa cta agg aaa act tac ggc       48
Asp Arg Gly Tyr Gln Glu Ala Met Ala Lys Leu Arg Lys Thr Tyr Gly
1               5                   10                  15

gaa tat ggt tta ggg gtt tct aca gga tta gat tta cct gaa tca gaa       96
Glu Tyr Gly Leu Gly Val Ser Thr Gly Leu Asp Leu Pro Glu Ser Glu
            20                  25                  30

ggt tat gta cct gga aaa tac agc tta gga aca act cta atg gaa tcg      144
Gly Tyr Val Pro Gly Lys Tyr Ser Leu Gly Thr Thr Leu Met Glu Ser
        35                  40                  45

ttc ggt cag tat gat gcc tat aca cca atg caa ctt ggt cag tat atc      192
Phe Gly Gln Tyr Asp Ala Tyr Thr Pro Met Gln Leu Gly Gln Tyr Ile
    50                  55                  60

tca act att gcg aat aat ggg aat cgt tta gca cct cac gtg gtt tca      240
Ser Thr Ile Ala Asn Asn Gly Asn Arg Leu Ala Pro His Val Val Ser
65                  70                  75                  80

gat atc tat gaa ggg aat gat tct aat aag ttc gct caa ttg gtt cgt      288
Asp Ile Tyr Glu Gly Asn Asp Ser Asn Lys Phe Ala Gln Leu Val Arg
                85                  90                  95

tca atc act cct aaa aca cta aat aag ata gct atc tca gat caa gag      336
```

```
Ser Ile Thr Pro Lys Thr Leu Asn Lys Ile Ala Ile Ser Asp Gln Glu
            100                 105                 110

tta gcc att att caa gaa ggt ttt tat aac gtt gtc aat agt gga agt      384
Leu Ala Ile Ile Gln Glu Gly Phe Tyr Asn Val Val Asn Ser Gly Ser
        115                 120                 125

ggc tat gca act ggt acg tca atg agg ggg aat gtg aca acc att agy      432
Gly Tyr Ala Thr Gly Thr Ser Met Arg Gly Asn Val Thr Thr Ile Ser
    130                 135                 140

ggt aaa act ggt acc gct gaa aca ttt gct aaa aat ata aat gga caa      480
Gly Lys Thr Gly Thr Ala Glu Thr Phe Ala Lys Asn Ile Asn Gly Gln
145                 150                 155                 160

aca gtt tct acc tac aac tta aac gct att gcc tac gat act aat cgt      528
Thr Val Ser Thr Tyr Asn Leu Asn Ala Ile Ala Tyr Asp Thr Asn Arg
                165                 170                 175

aaa ata gca gta gcg gta atg tat ccg cat gtt aca act gat aca aca      576
Lys Ile Ala Val Ala Val Met Tyr Pro His Val Thr Thr Asp Thr Thr
            180                 185                 190

aaa tcc cat caa tta gtt gca cga gat atg att gat caa tat att tca      624
Lys Ser His Gln Leu Val Ala Arg Asp Met Ile Asp Gln Tyr Ile Ser
        195                 200                 205

cag tca cag gac aat aag aga gga cat tga                             654
Gln Ser Gln Asp Asn Lys Arg Gly His
    210                 215
```

<210> 35

<211> 217

<212> PRT

<213> Streptococcus agalactiae

<400> 35

```
Asp Arg Gly Tyr Gln Glu Ala Met Ala Lys Leu Arg Lys Thr Tyr Gly
1               5                   10                  15

Glu Tyr Gly Leu Gly Val Ser Thr Gly Leu Asp Leu Pro Glu Ser Glu
            20                  25                  30
```

```
Gly Tyr Val Pro Gly Lys Tyr Ser Leu Gly Thr Thr Leu Met Glu Ser
        35                  40                  45

Phe Gly Gln Tyr Asp Ala Tyr Thr Pro Met Gln Leu Gly Gln Tyr Ile
    50                  55                  60

Ser Thr Ile Ala Asn Asn Gly Asn Arg Leu Ala Pro His Val Val Ser
65                  70                  75                  80

Asp Ile Tyr Glu Gly Asn Asp Ser Asn Lys Phe Ala Gln Leu Val Arg
                85                  90                  95

Ser Ile Thr Pro Lys Thr Leu Asn Lys Ile Ala Ile Ser Asp Gln Glu
            100                 105                 110

Leu Ala Ile Ile Gln Glu Gly Phe Tyr Asn Val Val Asn Ser Gly Ser
        115                 120                 125

Gly Tyr Ala Thr Gly Thr Ser Met Arg Gly Asn Val Thr Thr Ile Ser
    130                 135                 140

Gly Lys Thr Gly Thr Ala Glu Thr Phe Ala Lys Asn Ile Asn Gly Gln
145                 150                 155                 160

Thr Val Ser Thr Tyr Asn Leu Asn Ala Ile Ala Tyr Asp Thr Asn Arg
                165                 170                 175

Lys Ile Ala Val Ala Val Met Tyr Pro His Val Thr Thr Asp Thr Thr
            180                 185                 190

Lys Ser His Gln Leu Val Ala Arg Asp Met Ile Asp Gln Tyr Ile Ser
        195                 200                 205

Gln Ser Gln Asp Asn Lys Arg Gly His
    210                 215
```